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REMARKS

Applicants have amended their abstract to make it more succinct, and have corrected the dependencies of certain dependent claims as the Examiner noted. Applicants have also rewritten dependent claims 25, 46 and 48 (indicated as allowable) into independent form, and have amended each of their independent claims to more particularly point out the invention. Applicants also are adding new independent claim 49 based roughly on allowable claim 48 but excluding certain details. Applicants respectfully request the Examiner to reconsider and allow this patent application in view of the amendments above and the following remarks.

Applicants have amended each of their independent claims 1, 14, 18, 21, 26, 28, 33, 39, 43, 44, 45 and 47 to require a blender stage to provide both color blend and alpha blend operations. See for example specification at page 20 lines 1-12. Applicants respectfully submit that this feature in combination is not taught by the applied references.

The Examiner effectively concedes that Gossett et al. does not teach this claimed feature (see Office Action, page 7, paragraph 10 and following) but asserts that it would have been "obvious" to incorporate Van Hook's alpha teachings into Gossett's recirculating pipeline. Applicants respectfully disagree. Van Hook's alpha blending occurs within the "blender" 510 shown in Figure 20 which is well "downstream" of texture unit 506. In contrast, Gossett's disclosed recirculating texture environment unit

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203 (see Figure 2) relied upon by the Examiner does not seem to provide any alpha (opacity) channel. Neither of these references suggest or hint at any advantage that might be gained by recirculating the alpha channel. For example, neither reference teaches or suggests what applicants realized and stated on page 20 that "[t]his ability to provide independent color and alpha operation controls for each recirculating stage allows recirculating shader 602 to perform arbitrarily complex alpha (transparency) trees of operations at no additional cost in terms of processing speed."

The Examiner contends that it would have been "obvious" to make the modification "because the mode blender can perform different conditional color blending and Z buffer updating, and therefore can handle all other various types of surface (opaque surfaces, transparent surfaces)", citing to Van Hook at column 54 lines 39-43. However, the paragraph of Van Hook the Examiner cites says nothing about alpha blending. Note that in the paragraph above at column 54, lines 30-38, Van Hook teaches that blender 510 blends the combined pixel value "against the frame buffer 118 pixels." This appears to teach away from recirculating the alpha as claimed.

With respect to dependent claim 3, the Examiner also relied on the Cook journal article as allegedly disclosing "recirculation of the shader output" -- citing to section 3 "Shade Trees" page 224. However, Cook's description appears to be of a purely software implementation that precompiles the shade tree beforehand and then passes parameters to software routines. See page 228 ("The overhead involved in using shade trees is small

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since the tree construction and traversal is done ahead of time by the shade tree compiler. At run time there is just a list of routines to call for each surface and a list of arguments (i.e., appearance parameters) for each routine.") In contrast, claim 1 from which claim 3 depends requires a hardware shader.

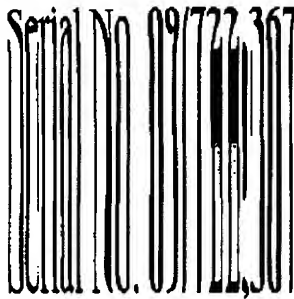
The Examiner also cited Myhrvold at col. 71 lines 10-13 as allegedly teaching the "color swap" feature of dependent claim 9. However, this Myhrvold passage appears to relate to a fragment and/or pixel swap as part of depth sort -- not color swap in the context of a shader as claimed herein. See e.g., col. 69, line 49 and following.

Applicants direct the Examiner's attention to copending application Serial Number 09/726,212 entitled "Method And Apparatus For Providing Logical Combination Of N Alpha Operations Within A Graphics System" filed concurrently with this case. That application is being examined by Examiner Tam D. Tran of art unit 2676, and is subject to a 3/13/03 office action rejecting all claims in view of U.S. Patent number 5,684,941 to Dye. That reference was previously submitted. Attached hereto is a PTO-1449 listing some additional items that have recently come to light in a foreign search report.

Applicants request the Examiner to cite and consider these documents in this case.

All outstanding issues have been addressed, and the subject application is believed to be in condition for allowance. Should any minor issues remain outstanding, the Examiner is requested to contact the undersigned at the telephone number listed below so that all such may be resolved as expeditiously as possible.

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Respectfully submitted,

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